Cooke Hydroelectric Plant, Substation
Cooke Dam Road at the Au Sable River
Oscoda Vicinity
Iosco County
Michigan

HAER No. MI-98-D

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Mid-Atlantic Regional Office
Department of the Interior
143 South Third Street
Philadelphis, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD

COOKE HYDROELECTRIC PLANT, Substation

HAER No. MI-98-D

Location: Cooke Dam Road at the Au Sable River
Oscoda Vicinity
Iosco County, Michigan

UTM: 17:295500:4927345
Quad: Sid Town, Mich., 1:24,000

Date of Construction: 1940(?)

Engineer: Consumers Power Company, Jackson, Michigan

Present Owner: Consumers Power Company
212 West Michigan Avenue, Jackson, Michigan 49201

Present Use: Electrical substation for hydroelectric generating plant

Significance: The outdoor Substation houses transformers which step up the electrical current produced at Cooke to 46,000 volts, in preparation for transmission to the nearby Iosco-Loud lines. It apparently replaced a previous outdoor substation that was situated on the South Embankment.

Project Information: This documentation was prepared by Consumers Power Company (CPCo) in conformance with its Cultural Resources Management Plan for the Au Sable River Hydroelectric Projects (July 1995). The plan stipulated the recordation of the entire Cooke Hydroelectric Plant (according to the standards of the Historic American Engineering Record) as mitigation for the planned rehabilitation of the plant's concrete spillway. The documentation was completed in 1996 by Hess, Roise and Company of Minneapolis under contract with CPCo. Jeffrey A. Hess served as Principal Investigator and Cynthia de Miranda as Project Historian. Project photography was completed under a subcontract with Hess Roise by Clayton B. Fraser of Loveland, Colorado.

PHYSICAL DESCRIPTION

The outdoor Substation at the Cooke Hydroelectric Plant sits on the south riverbank, on a long, rectangular piece of land immediately adjacent to the southern end of the main (east) facade of the Powerhouse (HAER No. MI-98-C). Three transformers step up the current to 46,000 volts for transmission to the Iosco-Loud lines, located 150' southwest of the Cooke plant. A small concrete pad supports the equipment, and chain-link fencing encircles the entire yard, which measures roughly 25' x 60'. The Substation also includes a 4,800-volt distribution circuit.[1]

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[1] "Au Sable River Hydroelectric Projects—Bidders Cover Sheets," December 1988, Civil/Mechanical Engineering Projects, Engineering and Construction, Consumers Power Company, Parnall Road, Jackson, Michigan.

HISTORY

When the Cooke plant went on line in 1912, three 3000-kw General Electric, oil-insulated, water-cooled transformers stood in the south end of the Powerhouse (HAER No. MI-98-C). The 14'-6"-tall units stepped up the current pressure from 2500 volts to 140,000 volts. The electricity then moved through 140,000-volt, General Electric K-10 oil switches located immediately behind (south of) the transformers. Transmission wires passed from the switches through insulated openings in the south wall of the Powerhouse to towers outdoors. These towers, set into poured concrete slabs, carried high-voltage transmission cables over the South Embankment (HAER No. MI-98-E) on their way to the next substation at Zilwaukee, approximately eighty-five miles to the south.[2]

Some time before 1940, Consumers Power Company built a new, outdoor substation on the crest of the South Embankment (HAER No. MI-98-E). Concrete stairs provided access to the yard.[3] Only concrete and fieldstone foundations remain today, as does a concrete drainage chute no longer in use. The transformers in the Powerhouse were still intact at this time.

By 1940, the outdoor substation was revamped. All the transmission towers were removed from the southern end of the dam, and the new Substation was moved to its current location, next to the southern end of the main (east) facade of the Powerhouse. The original transformers were taken out of the Powerhouse in 1957.[4]

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[2] "Highest-Voltage Transmission System in the World, Part I," *Electrical World* 59 (13 April 1912): 795. This article is reproduced in HAER No. MI-98.

[3] "Cooke-2534," photograph in System Operations historical files, Consumers Power Company, Parnall Road, Jackson, Michigan.

[4] The description of the transformers' original location, as well as the early changes to the substation, is based on historic views of the facility. See Fig. 4 in the *Electrical World* article reproduced in HAER No. MI-98. Also see Commonwealth Power Corporation for Consumers Power Company, "Layout of Bus Run from Switch Structure, 1925," Drawing M28-G28, Sheet 1, updated through 1993, Corporate Archives, Consumers Power Company, Bridge Street, Jackson, Michigan.

SOURCES OF INFORMATION

ENGINEERING DRAWING

Commonwealth Power Corporation for Consumers Power Company. "Layout of Bus Run from Switch Structure, 1925." Drawing M28-G28, Sheet 1, updated through 1993. Corporate Archives, Consumers Power Company, Bridge Street, Jackson, Michigan.

HISTORIC VIEW

"Cooke-2534." Photograph in System Operations historical files, Consumers Power Company, Parnall Road, Jackson, Michigan.

MANUSCRIPT SOURCE

"Au Sable River Hydroelectric Projects—Bidders Cover Sheets." December 1988. Historical files, Civil/Mechanical Engineering Projects, Engineering and Construction, Consumers Power Company, Parnall Road, Jackson, Michigan.

PUBLISHED SOURCE

"Highest-Voltage Transmission System in the World, Part I." *Electrical World* 59 (13 April 1912): 795-798.